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REMARKS

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Claims 1-78 are pending in this Application. The Abstract, Inventors, and Specification have been objected to. Claims 1-78 stand rejected under 35 U.S.C. 101 as allegedly being drawn to non-statutory subject matter. Claims 1-78 stand rejected under 35 U.S.C. 112 as allegedly lacking a practical application. Claims 1-78 stand rejected under 35 U.S.C. 112 as allegedly being indefinite for use of the term "arbitrary." These rejections are respectfully traversed.

The objections to the Abstract have been noted, and will be corrected upon indication of allowable claims.

The Examiner asserts that a statement in a prior art reference requires correction of inventorship. The Applicant disagrees. As noted by the Federal Circuit, "a long line of decisions in this court holds that a person is a joint inventor only if he contributes to the conception of the claimed invention." *Eli Lilly and Co. v. Aradigm Corp.*, 376 F.3d 1352, 1359 (Fed. Cir. 2004) (emphasis added). The statement relied on by the Examiner at best suggests that others may have employed a variation of the Helmholtz-Kirchhoff equation to computer model a wide range of diffracting systems, but do not even establish that employing a variation of the Helmholtz-Kirchhoff equation to computer model a wide range of diffracting systems is any way related to the claimed invention, which is drawn to associative memory devices and a method of autonomous pattern recognition. As such, nothing in the cited passage evidences that the named persons contributed to the conception of the claimed invention. Withdrawal of this objection is respectfully requested.

In regards to the objections to the specification, M.P.E.P. 2107.02 states that the "claimed invention is the focus of the assessment of whether an applicant has satisfied the utility requirement. Each claim (i.e. each "invention"), therefore, must be evaluated on its own merits for compliance with all statutory requirements." (Emphasis added). As no nexus has been shown between the alleged defects in the specification and the claimed inventions, the objection is improper. Withdrawal of the objection is respectfully requested.

In regards to the claim rejections under 35 U.S.C. 101, the guidance of M.P.E.P. 2107.02 is again invoked, as such rejections require evaluation of each claim on its own merits. The rejections in the Office action under 35 U.S.C. 101 are not based on an analysis of the invention as a whole, but

only on selected excerpts from selected claims. The claimed invention as a whole for each and every claim must be considered. Consider *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1357 (Fed. Cir. 1999), where the Federal Circuit explained that:

The *State Street* formulation, that a mathematical algorithm may be an integral part of patentable subject matter such as a machine or process if the claimed invention as a whole is applied in a "useful" manner, follows the approach taken by this court en banc in *In re Alappat*, 33 F.3d 1526, 31 USPQ2d 1545 (Fed. Cir. 1994). In *Alappat*, we set out our understanding of the Supreme Court's limitations on the patentability of mathematical subject matter and concluded that: [The Court] never intended to create an overly broad, fourth category of [mathematical] subject matter excluded from § 101. Rather, at the core of the Court's analysis . . . lies an attempt by the Court to explain a rather straightforward concept, namely, that certain types of mathematical subject matter, standing alone, represent nothing more than *abstract ideas until reduced to some type of practical application*, and thus that subject matter is not, in and of itself, entitled to patent protection. *Id.* at 1543, 31 USPQ2d at 1556-57 (emphasis added). Thus, the *Alappat* inquiry simply requires an examination of the contested claims to see if the claimed subject matter as a whole is a disembodied mathematical concept representing nothing more than a "law of nature" or an "abstract idea," or if the mathematical concept has been reduced to some practical application rendering it "useful." *Id.* at 1544, 31 USPQ2d at 1557. In *Alappat*, we held that more than an abstract idea was claimed because the claimed invention as a whole was directed toward forming a specific machine that produced the useful, concrete, and tangible result of a smooth waveform display. See *id.* at 1544, 31 USPQ2d at 1557.

(Emphasis added). As such, it is apparent that the utility of the claimed invention as a whole must be the subject of the enquiry into the patentability of the claimed inventions under 35 U.S.C. 101. Ignoring those parts of the claim that are drawn to a practical application and only focusing on claim elements that, if they were claimed alone, *might* be properly rejected under 35 U.S.C. 101, is simply improper.

Consider claim 1, which is drawn to an associative memory device that includes "an input device for accepting a set or a plurality of sets of input information; one or a plurality of input buffers; a means for transporting the input information to the input buffer . . . one or a plurality of recording structures, referred to as a cortex . . . the output buffer being operable to transform the wave-modeled retrieval into output data; and a means for using control data to provide overall control of the associative memory device." As such, in regards to the first stated rejection under 35 U.S.C. 101, claim 1 as a whole is clear in its purpose or scope. It is simply improper, as explained

by the Federal Circuit in State Street Bank, Alappat, AT&T, and numerous other decisions, to create an overly broad, fourth category of [mathematical] subject matter excluded from § 101. The claimed invention of claim 1 as a whole is directed toward forming a specific associative memory device that produces a useful, concrete, and tangible result of wave-modeled retrieval.

Likewise, in regards to the second stated grounds for rejection under 35 U.S.C. 101, the Title is cited to support the conclusion that “[w]aves are synonymous with signals and signals are non-statutory.” Not only does rejecting the claims based on the Title fail to comply with the mandate of M.P.E.P. 2107.02 that each claim must be evaluated on its own merits, it defies credulity to suggest that systems that process signals, such as radios, televisions, telephones, radar, satellites, cameras, and numerous other items that have a readily apparent practical application are not patentable simply because they process signals, and because “signals are non-statutory,” such widely-patented systems have suddenly become unpatentable.

In regards to the third ground for rejection under 35 U.S.C. 101, the claims are drawn to associative memory devices and a method of autonomous pattern recognition, not to the mathematical formula for wave propagation. The rejection of the claims is based on an improper, overly broad, fourth category of [mathematical] subject matter excluded from § 101, resulting from the failure to examine the claims as a whole.

In regards to the fourth ground for rejection under 35 U.S.C. 101, the Examiner has not made the requisite showing that the claimed invention is undefined, accomplishes nothing if C=0 (if, in fact the claimed invention would even result in the condition that C=0), is missing a major step regarding the concept of inevitability as allegedly admitted by the application, or that the output is independent of the input. For example, again turning to claim 1, the teachings of the specification clearly establish that a situation where C=0 is to be avoided, and is not encompassed by the claims. Furthermore, the Examiner postulates a situation where the weighting factor is infinite to render C undefined. It is clear that the claims (see, e.g., claims 12, 17, 19, and 20) are drawn to data processing equipment that would be incapable of digitally representing an infinite value. Data processing equipment stores numbers in binary form, such that an infinite number of bits would be required to represent an infinite weighting factor. As such, the rejection of the claims is based on an impossible condition.

Likewise, the Examiner's citation to the use of the word "arbitrary" in the specification is unrelated to the use of the word arbitrary in the claims. Consider claim 1 prior to amendment, which included "the cortex being further adapted to form and store arbitrary linear combinations of associations" – that claim language merely stated that the linear combinations of associations are not fixed. The phrase "an arbitrary set of responses to identification" has been improperly equated with the claim language. However, since removal of the term "arbitrary" removes a basis for rejection of the claims under 35 U.S.C. 112 and makes the claims broader, the claims have been amended accordingly.

The Examiner's analysis of "invertible" is likewise incorrect, and was based apparently on a text search for that term and not on a review of the teachings of the specification as a whole. A search of the specification for roots of the word "invertible" reveals the following passage at paragraph 0080: "Code extraction: During the identification phase, the present invention uses an inverse procedure to extract, as accurately as possible, multiple, redundant copies of the identifier code from a retrieved pattern, or IIP, to make an identification. If the file has not previously been learned by the current invention, then no readable pattern is retrieved by the system." (Emphasis added) Likewise, the specification states at paragraph 0252 that "Retrieval involves the recall of information and so requires an operation inverse to that for association. If association were done by adding .psi. and .phi., then recall would require subtracting .phi. from .psi.. If multiplication were used, then the inverse operation could be division." As such, the conclusion that the specification does not disclose "the how of identifying such invertible mathematical relation" is not a correct conclusion and is based on the failure to consider the claims as a whole, as well as the failure to consider the teachings of the specification as a whole. Withdrawal of the rejection of the claims under all stated bases of 35 U.S.C. 101 is respectfully requested.

In regards to the first rejection of the claims under 35 U.S.C. 112, it is stated that the rejection was only applied because of the rejection of the claims under 35 U.S.C. 101. As that rejection is improper, withdrawal of the rejection of the claims under the first stated basis of 35 U.S.C. 112 is respectfully requested. In regards to the second stated basis, as previously described, the term "arbitrary" relates to the claimed invention being able to handle linear combinations of associations are not fixed, and as such the rejection was improper, but as removal of the term

broadens the claims and eliminates a basis for rejection under 35 U.S.C. 112, the claims have been accordingly amended.

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CONCLUSION

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In view of the foregoing remarks and for various other reasons readily apparent, Applicants submit that all of the claims now present are allowable, and entry of the amendments, withdrawal of the rejection and a Notice of Allowance are courteously solicited.

If any impediment to the allowance of the claims remains after consideration of this amendment, a telephone interview with the Examiner is hereby requested by the undersigned at (214) 953-5990 so that such issues may be resolved as expeditiously as possible.

A fee for a one month petition of time of \$60 is believed to be due, and a petition therefore is hereby made. Authorization to charge the deposit account of Jackson Walker L.L.P., No. 10-0096 for the extension of time fee is hereby given. If any applicable fee or refund has been overlooked, the Commissioner is hereby authorized to charge any fee or credit any refund to the deposit account of Jackson Walker L.L.P., No. 10-0096.

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Respectfully submitted,

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